R E M A R K S

In accordance with the requirements of the Office Action, applicant submits a new specification. The new specification corrects errors of syntax and includes language consistent with the new claims submitted herewith. The changes to the specification do not involve addition of new matter because the original specification and drawings provide a basis for all the changes to the specification and the new language added to the claims.

Previously submitted claims 1, 4, 12 and 13 have been cancelled and replaced by new claim 15, which includes an additional limitation. In addition, the subject matter of original claims 1, 4, 6, 12 and 13 has been combined in new independent claim 16. Claims 17-48 have been added to provide applicant with the protection to which he is deemed entitled. Claims 39-48 which depend on claim 16 are the same as the claims which depend on claim 15, except for dependencies.

The objection to the drawing is obviated because the claims no longer mention a conical head.

The claims have been amended to obviate the rejection based on 35 USC 112, paragraph 2, and the dependencies of the dependent claims have been modified so they are consistent with the submitted claims.

The anticipation rejection of claims 1-4, 6, 9 and 14 is not applicable to the newly submitted claims nor is the obviousness

rejection applicable to the newly submitted claims. In the previous Office Action, claims 1-4, 6, 9 and 14 were rejected as being anticipated by Lhota, EP 0 274 781, claim 10 was rejected as being obvious as a result of Lhota, and claims 1, 6, 11 and 12 were rejected as being anticipated by Reedy, U.S. Patent 1,937,246. New independent claim 15 differs patentably from Lhota, *inter alia*, by requiring an opposing shut-off surface of a valve body that opposes the free end of an activator to narrow as a funnel toward an outlet. In addition, Lhota does not disclose an outlet area arranged between an opposing shut-off surface and an outlet channel having conically narrowing opening surfaces.

Claim 15 differs patentably from Reedy by defining an outlet area arranged between opposing shut-off surfaces, wherein the outlet area has conically narrowing opening surfaces.

New claim 16 differs from both Lhota and Reedy by requiring a sealing element of a valve having shut-off surfaces to include a nose shaped projection at annular sealing surfaces that are formed between the shut-off surfaces of a sealing element and opposing shut-off surfaces of a valve seat of a valve body, when an outlet is shut off. Lhota obviously does not include such a relationship. In Reedy, the seats extend outwardly, toward the outlets and are configured as cylindrical holes to take up washer 33. Washer 33 holds the valve and its shut-off surfaces in position, as indicated in column 2, lines 67-72. As can clearly be seen from Figure 1 of

Reedy, in combination with Figure 4, the above-mentioned "portions" are not part of an annular sealing surface between a conical sealing element of valve 25 and valve 20. Thus, the step-like portion of the Reedy valve corresponding to washer 33 does not contribute to sealing between valve 25 and valve seat 20. Consequently, no self-sealing effect under liquid pressure occurs and the valve shut-off surfaces do not quickly reach a precise sealing position, as is achieved by the structure set forth in claim 16.

Newly submitted claim 17 distinguishes over the art of record by requiring a valve for selectively supplying fluid from an inlet port to an outlet port, wherein the valve has a sealing element and a passage selectively opened and shut between the inlet and outlet ports by the sealing element. The passage and sealing element are arranged so there is relative longitudinal back and forth movement between them in first and second opposite directions along a longitudinal axis such that when the sealing element is at (a) a first position relative to the passage along the axis the sealing element is disengaged from the passage interior surface to provide a fluid flow path between the inlet and outlet ports, and (b) a second position relative to the passage along the axis the sealing element engages a portion of the passage interior surface to form a seal between the inlet and outlet ports. The sealing element includes a tapered sealing surface for selectively engaging

portions of the passage interior surface to form the seal. The tapered sealing surface has cross sections of progressively larger perimeters along the axis such that the cross-section of the sealing element sealing surface closest to the outlet port has the smallest perimeter that is closer to the longitudinal axis than any other cross-section of the sealing element sealing surface. The passage interior surface includes a tapered surface having cross sections of progressively larger perimeters along the axis such that the cross-section of the passage interior surface closest to the outlet port has the smallest perimeter that is closer to the longitudinal axis than any other cross-section of the passage interior surface. The passage interior surface includes first and second segments displaced from each other along the axis so that the first segment is closer to the outlet port than the second segment and the second segment is closer to the inlet port than the first segment. The perimeters of all cross sections of the second segment are greater than the perimeters of all cross sections of the first segment so all of the passage interior surfaces of the first segment are closer to the axis than all of the passage interior surfaces of the second segment. The passage interior surface includes a lip between adjacent portions of the first and second segments such that there is a sudden transition between the perimeter of the cross-section of the first segment farthest from the outlet port and the perimeter of the cross-section of the

second segment closest to the outlet port. The length of the lip in a direction at right angles to the axis is substantially less than (a) the distance between the axis and the perimeter of the cross-section of the first segment farthest from the outlet port and (b) the distance between the axis and the perimeter of the cross-section of the second segment closest to the outlet port. The tapered sealing surface and the passage interior surface are sized, positioned and arranged so that during initial movement of the sealing element toward the first position a flow path is provided between the inlet and outlet ports between the tapered sealing surface of the sealing element and the passage interior surfaces including the first and second second segments. The spacing between the tapered sealing surface of the sealing element and the passage interior surface of the second segment while the flow path is provided during the initial movement of the sealing element is about the same as the length of the lip in a direction at right angles to the axis. As the sealing element continues to move toward the outlet port the tapered sealing surface of the sealing element engages the lip to form a seal and prevent fluid flow between the inlet and outlet ports.

Newly submitted claim 29 distinguishes over the art of record by defining a valve for selectively supplying fluid from an inlet port to an outlet port, wherein the valve includes a sealing element and a passage selectively opened and shut between the inlet

and outlet ports by the sealing element. The passage and the sealing element are arranged so there is relative longitudinal back and forth movement between them in first and second opposite directions along a longitudinal axis such that when the sealing element is at (a) a first position relative to the passage along the axis the sealing element is disengaged from the passage interior surface to provide a fluid flow path between the inlet and outlet ports, and (b) a second position relative to the passage along the axis the sealing element engages a portion of the passage interior surface to form a seal between the inlet and outlet ports. The sealing element includes a tapered sealing surface for selectively engaging portions of the passage interior surface to form the seal. The tapered sealing surface has cross sections of progressively larger perimeters along the axis such that the cross-section of the sealing element sealing surface closest to the outlet port has the smallest perimeter that is closer to the longitudinal axis than any other cross-section of the sealing element sealing surface. The passage interior surface includes a tapered surface having cross sections of progressively larger perimeters along the axis such that the cross-section of the passage interior surface closest to the outlet port has the smallest perimeter that is closer to the longitudinal axis than any other cross-section of the passage interior surface. The passage interior surface includes a lip. The tapered sealing surface and

the passage interior surface are sized, positioned and arranged so that during initial movement of the sealing element toward the outlet port a flow path is provided between the inlet and outlet ports between the tapered sealing surface of the sealing element and the passage interior surface. The tapered sealing surface and the passage interior surface are sized, positioned and arranged so that during initial movement of the sealing element from the first position toward the second position a flow path is provided between the inlet and outlet ports between the tapered sealing surface of the sealing element and the passage. The lip is arranged to deform slightly in response to the sealing element continuing to move toward the outlet port from the initial sealed state to provide an annular sealing surface having a length in the direction of the axis that increases from the length of the annular sealing surface when initial contact occurs between the sealing element sealing surface and the lip.

In view of the foregoing amendments and remarks, favorable reconsideration and allowance are respectfully requested and deemed in order.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including

extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

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MARKED UP VERSION SHOWING CHANGES

2. (Amended) The valve of claim [1] 15 wherein the shut-off surfaces are radially symmetrical to an actuation axis of [an] the actuator for translating the sealing element.

3. (Twice Amended) The valve of claim 2 wherein the actuator includes a tappet valve [tappet] connected to the sealing element.

5. (Twice Amended) The valve of claim 3 wherein [a cross-section] cross-sections of the shut-off surfaces in planes extending in the direction of longitudinal movement of the actuator and surface parts of the sealing element which mate with the shut-off surfaces and are opposite the inlet form an essentially continuous line.

7. (Twice Amended) The valve of claim [5] 15 wherein the opposing shut-off surfaces form an angle [having an] with the actuation axis at the annular sealing surface that is greater than or equal to 15°.

9. (Twice Amended) The valve of claim [6] 15 wherein the opposing shut-off surfaces [of the valve seat includes] of the valve body are formed of material that is softer and more elastic than [the] shut-off surfaces of the sealing element [elements].

11. (Amended) The valve of claim [6] 15 wherein the opposing shut-off surfaces have a step or nose-shaped projection at the annular sealing surface [surfaces].

14. (Amended) The valve of claim [1] 15 wherein the outlets are on both sides of the inlet and oppose each other.